(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
7 September 2001 (07.09.2001)

PCT

(10) International Publication Number
WO 01/65399 A2

(51) International Patent Classification[7]: G06F 17/00

(21) International Application Number: PCT/US01/06360

(22) International Filing Date: 28 February 2001 (28.02.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/515,064 28 February 2000 (28.02.2000) US

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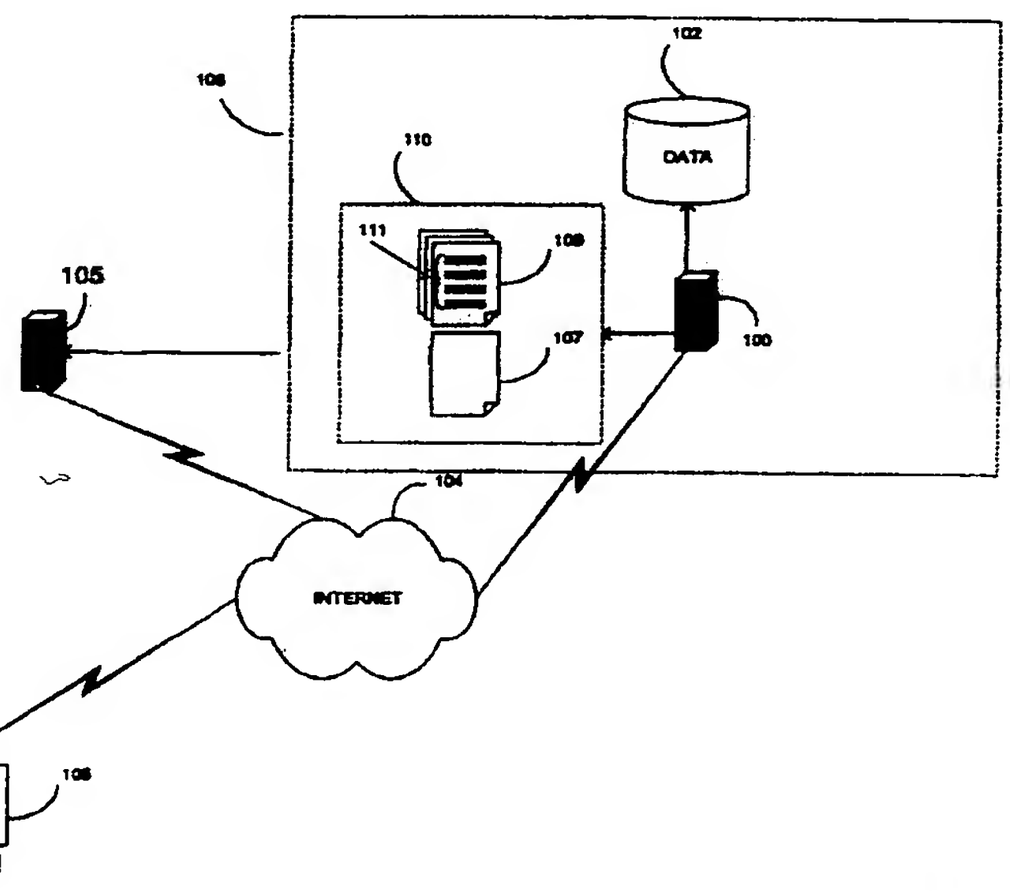
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: SYSTEM AND METHOD FOR GENERATING INTERNET SERVICES



(57) Abstract: A computerized method for automatically generating customized Internet services that are available through an agency. The method comprises providing at least one default service; providing a plurality of attributes; and automatically mapping predetermined attributes selected from the plurality of attributes with the default service, thereby creating a customized Internet service. Alternatively, a computerized method of generating a web page for posting on the Internet. The method comprises providing a page structure; providing a plurality of objects, each object relating to content used to form the web page; and mapping the content with the page structure, thereby creating a web page.

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SYSTEM AND METHOD FOR GENERATING INTERNET SERVICES

This application is being filed as a PCT International Patent application in the name of Innuity, Inc. a U.S. national corporation, designating all countries except the US, on 28 February 2001.

TECHNICAL FIELD

The present invention relates to a system and method for generating Internet services, and more particularly, to a system and method for automatically generating and publishing Internet services to a computer network.

BACKGROUND

The World Wide Web is a system of computing servers that are configured to operate on the Internet and provide access to Internet services, such as web sites, shopping carts, advertising banners and/or any other item that is published, posted, or utilized on the Internet. As electronic commerce continues to expand, organizations are continually seeking ways to deliver their products and/or services to users who access the Internet. Many organizations expend large amounts of resources attempting to develop and publish Internet services. Some Internet services, such as web sites, are created as specially formatted documents and are typically created using a computing language, such as hypertext markup language ("HTML"). Once these documents are created, they can be accessed via the World Wide Web using a web browser, such as Netscape Navigator™ or Microsoft's Internet Explorer™.

Typically, the development process associated with publishing Internet services to the World Wide Web requires an extensive undertaking. Oftentimes, the technical expertise required to generate competitive Internet services falls outside of the organization's core competencies. Thus, many organizations rely on outside consulting agencies to develop and/or publish Internet services to satisfy their business objectives.

There are several shortcomings that limit the ability of consulting agencies to develop high quality Internet services in an efficient manner. Typically, the development of the Internet services, such as web sites, involves preparing the source code for the documents supporting the Internet services. The development of the source code for the documents can be accomplished by either coding the documents from scratch or using an object–oriented design tool, such as Microsoft's FrontPage™. In either case, the Internet service designer typically captures user defined content that is published with and incorporated throughout the Internet

service. Often, the same information is captured repeatedly and coded at several locations throughout the document either manually or using the object–oriented design tool. Thus, the development process often tends to be tedious, slow, and expensive.

Furthermore, because the content is repeated throughout the source code for the document, the size of the document is unnecessarily large. Therefore, the document requires a large amount of storage capacity. Typically, these documents are stored in multiple locations for archival and version control purposes. Thus, in the event the production version of the Internet service is lost, an archived copy of the document can be retrieved. However, maintaining multiple copies of the large documents files increases the amount of storage capacity and related overhead required for publishing the documents to the World Wide Web. This overhead drives up the cost of developing and providing web services.

In order to simplify development of web services, many developers use static template files to lay out and create various aspects of the services such as the graphics and copyrighting. These static template files typically include presentation layout designs that specify the appearance and/or characteristics of the Internet service being generated. Because the appearance and/or characteristics are described in conjunction with the static template file, a new template is usually created for each style and presentation layout that the Internet service designer wishes to create. As a result, the reusability and interchangeability between the styles and presentation layouts is limited.

Moreover, to deal with some of the inherent inefficiencies associated with the development of Internet services, some consulting agencies have developed workflow plans. However, most workflow plans for developing Internet services are set up and designed to manage individual resource tasks and thus fail to provide a comprehensive approach to automating the activities associated with the generation of Internet services. As a result, many existing workflow methodologies are unable to drive large volumes of Internet services through a process in an efficient manner.

SUMMARY

In general terms, the present invention relates to a system and method for mapping information to generate Internet services. One aspect of the invention maps certain attributes to a default Internet service offering to create a customized Internet service that can be sold or offered to customers. An alternative aspect of the present invention is directed to generating a web page by mapping information into a predetermined page structure that can be posted on the Internet.

One embodiment of the present invention is directed to a computerized method for automatically generating customized Internet services that are available through an agency. The method comprises providing at least one default service; providing a plurality of attributes; and automatically mapping predetermined attributes selected from the plurality of attributes with the default service, thereby creating a customized Internet service.

An alternative embodiment of the present invention is directed to a computerized method of generating a web page for posting on the Internet. The method comprises providing a page structure; providing a plurality of objects, each object relating to content used to form the web page; and mapping the content with the page structure, thereby creating a web page.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a high–level diagram illustrating one possible emodiment of a system and method for generating Internet services in accordance with the present invention;

FIG. **2** is a diagram of the system architecture that supports the system and method for automatically generating Internet services according to the present invention;

FIG. **3** is an overview block diagram of a system and method for automatically generating Internet services;

FIG. **4** is a more detailed block diagram of the system and method for automatically generating an Internet service as shown in FIG. 3;

FIG. **5**, composed of FIGS. **5A–5C**, are block diagrams of the exemplary components generated after mapping the default Internet service offerings with the agency;

FIG. **6** is a block diagram detailing the workflow implementation associated with the various Internet services generated by the system and method of the present invention;

FIG. **7** is a block diagram illustrating the relationships between the various components of the database used to create a website;

FIG. **8** is a block diagram of the database architecture for automatically generating and publishing web services;

FIG. **9** is a more detailed block diagram illustrating the relationships between the various components of the database used to automatically generate websites;

FIGS. **10A** and **10B** shows an example of the placeholders embedded within the source code for the page structure used to dynamically generate a web site/web page; and

FIGS. **11–16** are flowcharts illustrating the logic followed when generating an Internet service according to the present invention.

DETAILED DESCRIPTION

Various embodiments of the present invention will be described in detail with reference to the drawings, wherein like reference numerals represent like parts and assemblies throughout these several views. Reference to various embodiments does not limit the scope of the invention, which is limited only by the scope of the claims attached hereto.

The following discussion is intended to provide a brief, general description of a suitable computing environment in which the invention may be implemented. Although not required, the invention will be described in the general context of computer-executable operations and instructions being executed by a general-purpose and programmable computing systems, such as an IBM-compatible personal computer (PC) or server. Generally, programmed operations perform particular tasks or implement particular abstract data types.

Moreover, the invention may be practiced with other computer system configurations such as hand-held devices, multiprocessor systems, microprocessor-based or programmable consumer electronics, network PCs, minicomputers, and mainframe computers and computer specifically designed and configured to perform operations and functions such as those described herein. The invention also may be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, computer programs may be located in both local and remote memory storage devices.

The embodiments of the present invention are implemented as logical operations in a system and method for automatically generating Internet services. The logical operations of the present invention are implemented: (1) as a sequence of implemented steps running on a computing system; and (2) as interconnected machine modules within the computing system. The implementation is a matter of choice dependent on the performance requirements of the computing system implementing the invention and the components selected by or utilized by the users of the system. Accordingly, the logical operations making up the embodiment of the invention described herein are referred to variously as subsystems or modules.

With reference to FIG. **1**, a computing environment for implementing the system and method for generating Internet services includes a development/production network **108** having one or more computing servers **100**, one or more databases **102**, and various other computing devices (not shown) connected thereto. It will be understood by one skilled in the art that the development/production network **108** can have many configurations. One possible embodiment for the development/production network **108** will be described in further detail in connection with FIG. **2** below.

The development/production network **108** is a system of computers configured to support the development and generation of Internet services **110**. In one embodiment, the Internet services **110** may be published content that is viewable on a monitor. Examples of such content include web sites **109** or other related Internet–related service **107** such as, banners, shopping carts, etc. The Internet services **116** may also include other items or services that are utilized on, implemented with, or related to the Internet such as e–mail, reservation of domain names, processing financial transactions, processing banners, etc. For exemplary purposes only, examples are provided herein that relate to the creation of web sites. It is understood however, that the system and methods described herein can be used with the creation of any Internet service.

The web sites **109** are typically documents created in a computing language source code **111**, such as hypertext markup language ("HTML") or eXtensible markup language ("XML"). The source code **111** controls the presentation and attributes of the information that is displayed in connection with the web site **109**. For example, the source code **111** may control presentation and attributes of text, images, audio, or other information that is displayed in connection with the web site **109**..

In one embodiment, the source code **111** is automatically generated using the database **102**. The database **102** dynamically maps the information that is displayed in connection with the Internet services **110** with the presentation layout for presenting and displaying that information. The information that is displayed in connection with the Internet services **110** is entered and saved once in the database **102**. Accordingly, the amount of effort required to generate the Internet services **110** is minimized. Likewise, the amount of storage capacity required to store the Internet services **110** is also minimized. Furthermore, in the event the Internet services **110** are damaged or destroyed, as explained in more detail below, the source code **111** can be regenerated easily and efficiently. One possible embodiment of the structure of the database **102** will be discussed in greater detail below in connection with FIGS. 7–10.

The development/production network **108** is in data communication with the communications network **104**. In one embodiment, the communications network **104** is the Internet. Moreover, the development/production network **108** is configured to publish, post, or provide, the web content **110** on the communications network **104** such that a computer user is able to access and view them using a computing system **106**. In one possible embodiment, the computing system **106** is a general purpose and programmable computing system, such as an IBM–compatible personal computer. Alternatively, the computing system **106** can be a laptop computer, workstation, palm– or hand–held computer, or any other device that can be used to access the Internet or other network. The computing system **106** typically has a resident operating system, such as those sold under the brand names Microsoft Windows™, Unix™, Linux™, DOS™, AIX™ or other similar operating systems. Furthermore, the computing system **106** has a web browser installed for accessing and viewing the content **110** via the communications network **104**, such as those sold under the brand names Microsoft Internet Explorer™ or Netscape Navigator™.

In additional to web sites, the Internet services **107** may include electronic commerce transaction systems as well as promotional Internet services. Examples of Internet services **107** include, but are not limited to, Internet shopping carts, banners, registration with search engines, or other similar Internet products or services. The development/production network **108** is configured to operate with various third–party or vendor computing systems **105** that may provide support for the Internet services **110**. For example, the vendor computing system **105** may be an Internet search engine, such as Excite^{SM}, Infoseek^{SM}, Yahoo^{SM} or other related Internet services.

Now referring to FIG. **2**, one possible embodiment for the production/development network **108** is shown. The production/development network **108** shown illustrates an exemplary system architecture that may be used to support the system and method for generating Internet services **110**, such as web **109** as well as other word–based services **107** that is discussed herein. The development and/or production of the Internet services **110** may occur over a network **112**. In one embodiment, the network **112** is an intranet. Alternatively, the network **112** can be a local area network ("LAN"), a wide area network ("WAN"), a virtual private network ("VPN"), or any other suitable computing network for developing and producing Internet services.

The network **112** is configured to operate with several computing systems. The various computing systems that may be configured to operate with the Internet **112** may include, but are not limited to, a print/file server **114**, a primary domain controller **116**, a backup domain controller **118**, and a development server

119. Additionally, peripheral equipment, such as printers, storage devices, or workstation computers may be configured to operate with the network 112. It will be understood by those skilled in the art that many other configurations and arrangements of the network, servers, and peripheral devices are possible.

The print/file server 114 stores and manages files accessible via the network 112. The print/file server 114 also manages the printing devices (not shown) that may be connected to the network 112. The primary domain controller 116 and the backup domain controller 118 manage the transfer of data between the various computing systems connected to the network 112.

The development server 119 manages the application software used by the Internet service designers 120 to capture data from the customer as well as to configure the Internet services 110. The application software used by the Internet service designers 120 will be described in greater detail below in connection with FIGS. 3 and 4. In one embodiment, the Internet service designer 120 communicates with the customer via the telephone 121 and captures information related to the customer and his or her business. In an alternative embodiment, the customer can submit data to the network 112 electronically via the communications hub 122. The electronically submitted data can be used in connection with the Internet services 110. For example, the customer can electronically submit data using a palm– or hand–held computer 123, laptop computer 124, telephone 125 or other similar communications device.

The development server 119 also manages the software used to generate/re–generate and publish the Internet services 110 via the network 112. The development server 119 is configured to operate with the production database 102 that dynamically maps the information that is displayed in connection with the Internet services 110 with the presentation layout for presenting and displaying that information. One possible embodiment of the structure of the database 102 will be discussed below in connection with FIG. 7–10.

A firewall 127 secures the network 112 and the data and application software residing on the various computing servers from unauthorized access. All data that attempts to pass through (either into or out of the network 112) the firewall 127 is required to meet specified security criteria. A router 128 connects the network 112 to an Internet service provider ("ISP") router 130 which provides access to the web server 136 and the communications network 104. Data is sent and received from the network 112 via communication carriers 129 and 131, respectively. In one embodiment, the communication carriers 129 and 131 are dedicated phone connection systems that allow high–speed Internet connections, such as a T1 carrier or a T3 carrier.

Once the Internet service **110** has been generated on the network **112**, the Internet services **110** are made available over the Internet in a manner appropriate for the type of service. For example, published content such as web pages, shopping carts, and on–line stores are saved to the web server **136** in the data storage area **138**. For example, for Internet services **110** that are web sites **109**, the generated HTML document created on the development server **119** is stored in the data storage area **138** and posted by the web server **136**. The web server **136** provides web server software for operation with the communications network **122**. Examples of web server software for use with the web server **136** include, but are not limited to, public domain web server software available from NCSA and Apache, or commercial packages available from Microsoft or Netscape. The web server **136** provides access to the Internet services **110** via the communications network **104**. A user can access the Internet services **110** saved to the web server **126** via the communications network **104** using the computing system **106** as described above in connection with FIG. **1**.

In addition to the web server **136**, Internet services can be delivered utilizing other media. For example, banners can be managed by a third party that distributes and posts the banners in a predetermined manner. In another example, e–mail services created using the network **112** can be administered by a third party. In yet another example, financial transactions underlying services such as on–line stores are referred to a third party skilled in processing such transactions and coordinating the flow of financial information and assets between financial institutions such as banks.

As mentioned above, the router **128** also connects the network **112** to the communications network **104**. In one embodiment, the communications network **104** is the Internet. Alternatively, the communications network **104** can be any network that supports accessing the Internet services **110** using a computing system **106**.

Now referring to FIG. **3**, a high–level overview block diagram of one possible embodiment of a system and method for generating Internet services is shown. The system and method for generating Internet services **110** is based on the relationship between a customer, service, and agency. The profile of the customer, service, and agency influence the uniqueness of the Internet service **110** generated using the system and method described.

In one embodiment, each default service offering **200** is associated with one or more agencies **202**. Each default service offering **200** is a standard service having a predetermined format. Agencies **202** are groups or organizations that provide various sales channels for offering to a customer **201** customized

Internet services that are based on the default Internet offerings **200**. For example, each agency **202** can be a third–party organization that markets Internet services to customers **201** via the telephone (not shown), the Internet, or in connection with other marketing services provided by each agency **202**.

Each agency **202** defines attributes for the Internet services data it provides to customers **201**. As explained in more detail herein, these attributes are automatically mapped to the default Internet service offering **200** to create customized Internet services. Examples of attributes that an agency **202** can choose to customize these service offerings include style, headers and footers, page numbers, and other characteristics. This mapping operation is performed by the gathering/design module **205**.

In other possible embodiments, an agency **202** can also define pricing schemes and workflow steps, which are similarly mapped to the default Internet offerings **200** to customize pricing plans and production steps to meet the needs and desires of individual agencies **202**. As a result, the consistency and branding of the Internet services is enhanced. The relationship between the customer, service, and agency will be discussed in greater detail below in connection with FIG. **4**.

The system also includes a data gathering/design module **205** that is accessible to an Internet service designer **120** via the development server **119**. In one embodiment, the data gathering/design module **205** is a software application that is used to capture information about the customer **201** as well as specify the characteristics of the Internet service **110** being generated by the system. The data gathering/design module **205** may be resident on the Internet service designer's workstation **120** or on the development server **119**.

The data gathering/design system **205** includes a service design subsystem **204** and an Internet generation subsystem **206**. The service design subsystem **204** facilitates the configuration of the default service offering **200**. As discussed above, the system and method for generating Internet services **110** is based on the relationship between the customer **201**, default service offering **200**, and agency **202**. Hence, the profile of the customer **201**, default service offering **200**, and agency **202** can be used to generate a distinct Internet service **110**. The service design subsystem **204** also specifies the activities that should be taken to generate and customize the default service offering **200** as well as the order of completion for those activities. The service design subsystem **204** will be discussed below in greater detail in connection with FIGS. **4**.

The data gathering/design module **205** also includes an Internet generation subsystem **206** that is configured to receive input from an Internet service designer **120**. In one embodiment, the Internet generation subsystem **206** automates

the generation of activities specified by the service design subsystem **204** by directing one or more Internet service designers **120** through completion of each activity. The Internet generation subsystem **206** automatically moves the selected service offering **200** through all appropriate activities as specified in the service design subsystem **204**. Accordingly, the Internet generation subsystem **206** bypasses those activities not required for generation of the selected service offering **200**. As each activity specified in the service design subsystem **204** is completed, a status field can be loaded with information to indicate that the activity has been finished. In so doing, the Internet generation subsystem **206** can direct one or more Internet service designers **120** through each specified activity in the order that each was specified for completion.

The Internet service designer **120** further develops and generates an Internet service **110** based on the customer's **201** selected service offering **200**. The data gathering/design module **205** allows the Internet service designer **120** to define the presentation layout for presenting and displaying information gathered relating to the customer **201** and the selected service offering **200**. The Internet service designer **120** uses this information to develop the basic presentation layout of the web content **110** within the limitations set forth by the selected default Internet offerings **200** and permissible modifications requested by the customer. Within these limitations the Internet service designer **120** assigns various web elements to place and publish on the web content **110**. The various components of the Internet service **110** design are saved to the production database **102**. One possible embodiment of the structure of the database **102** for generating and regenerating the web contents **110** will be discussed in greater detail below in connection with FIGS **7–10**.

The Internet service designer **120** also works with the customer **201** to gather demographic information about the customer, such as the customer name, the business name and address, the business email address, and other related information. The Internet service designer **120** also gathers customer–defined information related to the Internet service **110** being generated by the system, such as business slogans, product/service offers, keywords used to describe the products/services being offered, and other related information. The information gathered by the Internet service designer **120** is saved to the production database **102**. Thus, the information gathered is saved only once to the database **102**. As a result, the redundancy of gathering and storing data related to the generation of the Internet service **110** is reduced. Furthermore, the amount of time and effort required to generate the Internet service **110** is also reduced.

After the Internet generation subsystem **206** has completed processing, the Internet service **110** may be automatically generated using the production database **102**. The production database **102** dynamically maps the information captured using the data gathering module **205** with the presentation layout for presenting and displaying that information as defined in the Internet generation subsystem **206**. After the Internet services **110** have been generated, they can be published to the World Wide Web.

As mentioned above, the information that is displayed in connection with the Internet services **110** is entered and saved once in the database **102**. Accordingly, the amount of effort required to generate the Internet services **110** is minimized. Likewise, the amount of storage capacity required to store the Internet services **110** is also minimized. Furthermore, in the event the Internet services **110** are damaged or destroyed, the Internet services **110** can be regenerated easily and efficiently. One possible embodiment of the structure of the database **102** for generating and regenerating the Internet services **110** is discussed in greater detail below in connection with FIGS. **7–10**.

A more detailed block diagram of the system and method for automatically generating Internet services is shown in FIG. **4**. As discussed above, the agency **202** is associated with one or more default service offerings **200** that are available to customers. The service design subsystem **204** facilitates the configuration or customization of the default service offering **200**. As discussed above, the system and method for generating Internet services **110** is based on the relationship between the customer **201**, the agency **202**, and the default service offerings **200** associated with the agency. The profiles of each help to configure a unique and distinct service **110**.

In one embodiment, mapping/indexing module **212** maps the selected default service offering **200** with the agency **202**. In another embodiment, the mapping/indexing module **212** generates the various components that define the processes and the information used to complete generation of the selected default service offerings **200**. In one embodiment, the mapping/indexing module **212** defines the Internet service attributes **214**, pricing **216**, and workflow definition **218** for selected default service offering **200**.

As shown in FIG. **5A**, the attributes **214** define attributes classes **215A–215D** that specify the physical characteristics and the components mapped to the default service offering **200** to generate a customized service for offering to customers **201**. For example, the attributes **214** may define whether the customized service will be registered with a search engine **215A**. Alternatively, the attributes **214** may define whether the customized service based on the defaults will include

banners **215B**, promotional elements **215C**, or other similar components **215D**. Moreover, each attribute class **215A–215D** may contain information relevant to its generation. For example, the customer **201** may specify that a unique and different company logo be used with the banners **215B**.

The pricing **216** establishes the price of the customized service that is charged to the customer **201**. In one embodiment, the pricing **216** is determined based on the billing method **217A** and the billing frequency **217B** associated with the agency **202** and the selected service as shown if FIG **5B**. The billing method **217** defines how the customer **201** will pay for the service **110**. For example, the customer can specify that payments will be made using cash, check, via a third a party, or using a similar payment method. The billing frequency **217B** defines the schedule for when payments from the customer **201** are due. Based on the combination of billing method **217A** and billing frequency **217B**, a unique price **216** can be determined for the selected service offering **200**.

The workflow definition **218** defines the generation method used to generate a customized service from a given Internet service offering **200**. For example, the generation method defines the standard activities that are typically completed in order to generate the selected customized service offering **200**. For example, the standard activities that are typically completed when generating an Internet service, such as a web site, might include recording the sale associated with the web site, designing the web site, performing quality control analysis of the web site, publishing the web site to the World Wide Web, and printing and sending notification to the customer. These activities are completed by the Internet service designer **120** who accesses the data gathering/design module **205** via the Internet generation subsystem **206**.

The workflow definition **218** is different for each Internet service offering **200** and is based on the relationship between the Internet service offering **200** and the agency **202**. The activities defined in the work flow definition **218** is specified by a given agency **202** as shown in FIG. **5C** and can vary on a case by case basis. For example, a single agency **202** can have associated with it several default service offerings **200A–200C** that can be modified to generate an Internet service **110**. For each Internet service, the list of activities to be completed by the Internet service designer **120** varies.

The attributes **214**, pricing **216**, and workflow definition **218** combine to create a unique or customized service offering **220**, which is an Internet service available to customers. In most cases, the creation of the customized Internet service offering **220** does not occur each time a customer **201** requests an Internet service offering **200** from an agency **202**. Accordingly, the processing required for

generating the Internet service **110** is reduced. Moreover, once the customer **201** selects a service offering **220** that is available through an agency **202**, approximately 30–70% of the steps necessary for generation of the Internet service **110** have been completed. Thus, the generation of Internet services using the system improves the efficiency of the overall development process.

Referring again to FIG. **4**, after a customer selects an Internet service **220**, the Internet generation subsystem **206** automates the tasks specified by the service design subsystem **204** and generates the Internet services **110**. Examples of the Internet services **110** that are generated by the generation subsystem **206** include, but are not limited to, a web site **226**, a shopping cart **228**, an on–line Internet traffic promotion and maximization service **230** for web pages and sites hosted on the web server **136**, a payment gateway **232**, promotional services **234**, and other related or similar Internet services **236**.

The Internet generation subsystem 206 is capable of receiving customer input **222** to further customize the attributes **214**, pricing **216**, and workflow definition **218** associated with the unique Internet service offering **200**. The customer input **222** is communicated through the Internet service designer **120**. For example, the customer **201** can request that the unique Internet service offering **220** include attributes **214** that may not be associated with the agency **202**. Similarly, the customer **201** can specify that the standard activities listed in the workflow definition **218** exclude standard activities or include non–standard activities.

Furthermore, the service generation subsystem **206** also captures information about the customer **201** as discussed above. For example, the service generation subsystem **206** captures demographic information, such as the customer name, the business name and address, the business e–mail address, and other related information. Similarly, the Internet generation subsystem 206 also captures customer–defined content that is related to the Internet service being generated by the system. Examples of the customer–defined content include, but are not limited to, business slogans, product/service offers, keywords used to describe the products/services being offered, and other related information.

As discussed above, the information gathered by the Internet service designer **120** is saved to the production database **208**. Thus, the information gathered is saved only once to the database **208**. As a result, the redundancy of repeatedly gathering the same data related to generation of the Internet service **110** is reduced. Furthermore, the amount of time and effort required to generate the Internet service **110** is also reduced.

The workflow implementation **224** receives the customer input **222** and coordinates generation of the requested Internet service using one or more Internet service designers **120**. The workflow implementation **224** automatically processes the generation of the Internet services **110** by coordinating the completion of the appropriate activities listed in the workflow definition **218**. As discussed above, the workflow definition **218** specifies the standard activities that are typically completed when generating the Internet service **110**. The workflow definition **218** may be different for individual customized services **220** and is based on the relationship between the default service offering **200** and the agency **202**. Thus, the activities defined in the work flow definition **218** for a given default service offering **200** vary depending on the agency **202** and may vary between the customized Internet services **220** offered by any given agency **202**. Moreover, as discussed above, the customer **201** can modify the workflow definition **218** by specifying that the standard activities listed either exclude standard activities or include non–standard activities.

During processing, the workflow implementation **224** excludes activities that are not required and moves through each activity in the order specified in the workflow definition **218**. In one embodiment, the activities listed are assigned and completed in sequence. In an alternative embodiment, the activities listed in the workflow definition **218** can be performed asynchronously while other activities are being completed. After completion of the workflow implementation **224**, the Internet service **110** can be generated using the production database **208** and may be published to the World Wide Web.

The activities related to generation of Internet service **110** are executed in steps such as recording a sale of a customized Internet service **220**, production, quality control, printing, publishing, etc. The steps executed when generating the Internet service **110** can depend on a variety of factors including the type of Internet service being generated, requirements especially by the agency **202**, and instructions received from the customer **201**. Each step has a status indicating whether it has been executed. In one possible embodiment, certain steps must be performed sequentially. In this situation, a change in the status of one step causes the generation process to index or move to the next subsequent step. When execution or fulfillment of one step requires certain other steps to be complete, the one step will not be executed until the status of the certain other steps are changed. The status is indicated in a database field of the production database **102** that identifies what work has been performed.

Now referring to FIG. **6**, a block diagram illustrating the workflow implementation process associated with the various Internet services **110** is shown.

As discussed above, the workflow implementation **224** automatically processes the generation of the Internet services **110** by coordinating with one or more Internet service designers the completion of the appropriate activities listed in the workflow definition **218**.

The workflow implementation process illustrated in FIG. **6** shows the workflow implementation process as a series of activities **252** and definitions **254** associated with a given Internet service **110**. In order to generate the Internet service, one or more Internet service designers **120** completes the activities **252** and the definitions **254** associated with the Internet service **110**. The activities **252** lists the processes to be completed in order to generate the Internet service **110**. For example, the activities **252** can include, but are not limited to, design of the service, quality control of the service, billing the customer for the service, and other similar activities. The definitions **254** set the characteristics of the Internet service **110**, such as the style associated with the presentation of the web content.

Each arrangement of activity definitions **252** and processes **254** are associated with a given Internet service **110**. For example, the web site **226** has activity definitions **252** and processes **254** that form the workflow **256** that is to be complete in order to generate the web site **226**. The arrangement of activity definitions **252** and processes **254** are based on the Internet service **110** and the activities listed in the workflow definition **218**. As a result, the workflow implementation **224** is not dependent upon specific resource assignments. Instead, the workflow process automatically facilitates the generation of the Internet services **110** by coordinating with one or more Internet service designers **120** the completion of the appropriate activities listed in the workflow definition **218**. Furthermore, there is no manual intervention required in order to assign a certain activity **252** or definition **254** for completion by an Internet service designer **120**.

Referring to FIG. **7**, a block diagram illustrating a design activity for creating an Internet service **110** is shown. FIG. **7** also illustrates the database architecture and the relationships between the various components of the production database **208** used to automatically generate and publish the Internet services **110** in accordance with the present invention.

As shown in FIG. **7**, the Internet service **110** automatically generated from the production database **208** is a web site **354**. However, it will be understood by those skilled in the art that a similar database architecture can be used to create any of the Internet services **110** already discussed above.

In this embodiment, the customer **201** is able to select the navigation methods **350** used in the web site **354** as well as the style **352** for the web site **354**. The navigation methods **350** establish how the user who accesses the web site will

navigate throughout the web site. The style **352** establishes the theme or look and feel for the entire web site **354**. In addition, each unique business has a standard industry code ("SIC") that is used to designate the business classification associated with the customer's business. Styles are associated with and classified under SIC codes aligning default themes that are industry or business specific. The system will automatically select pictures and other elements for the web site **354** based on the SIC code. Thus, each web page **358** on the web site **354** will have a consistent look and feel specifically related to the selected industry.

The navigation **350** and the style **352** are integrated into the overall design of the web site **354**. The web pages **358** are documents that are published on the World Wide Web and are identified by a unique uniform resource locator ("URL"). Typically, each web page **358** is produced in a computing language such as hypertext markup language ("HTML") or eXtensible markup language ("XML").

Furthermore, a mapping table **360** is associated with each web page **358**. Each mapping table **360** relates predetermined objects to a given page structure. Each page **358** is in turn created using this relationship. In this manner, the mapping table **360** defines a basic presentation layout where multiple web objects **362** can be placed on the web page **358**. In one embodiment, the web objects **362** define the source code that identify the page elements and content that are placed on the web page **358**. Web content **366** can then be associated with each web object **362** in order to populate the web objects **362** on the web page **358**.

Moreover, the mapping table **360** is also associated with a page structure **364** that defines the source code for the presentation layout of the web page **358**. In one embodiment, the page structure **364** has source code in HTML for publishing each web page **358** to the World Wide Web. The source code for the page structure **364** is stored on the production database **208**. The page structure **364** source code includes placeholders (not shown) for the web objects **362** which are discussed below in conjunction with FIG. **8**.

Now referring to FIG. **8**, a more detailed diagram of the database architecture for automatically generating and publishing web content **110** is shown. As discussed above, one or more web objects **362** is associated with the web page mapping table **360**. Conversely, a single page structure **364** is associated with the web page template **360**. The web objects **362** and the page structure **364** are dynamically mapped together in order to create the source HTML for each web page **358**. The source HTML document is used to publish the web page to the World Wide Web. The mapping table **360** processes the page structure **364** in order to build the source HTML for the web page **358**.

As discussed above, the page structure **364** has source code for publishing the web page **358** stored on the production database **208**. The source code for the page structure **364** contains placeholders **372** for the web objects **362**. The web objects **362** are defined once and can be used in any combination on any web page **358** that is created.

The web objects **362** contain placeholders **372** that can be populated with information from the database. The placeholders **372** can be data placeholders **374**, style placeholders **376**, or content placeholders **378**. Data placeholders **374** are data elements about the customer **201** gathered by the Internet service designer **120** during the initial setup of the Internet service. For example, the data placeholders **374** can include basic information about the customer **201**, such as the customer's name, business name, and other related information. The style placeholders **376** cross–reference various design elements that are defined by the selected styles. For example, the style placeholders **376** can cross–reference the size and color of text appearing on the web page **358**. The content placeholders **378** cross–reference customer–defined content stored on the production database **208** as discussed above.

As shown in FIG. **9**, a block diagram illustrating the dynamic mapping process **360** used to map the web objects **362** with the page structure **364** is shown. As discussed above, the page structure **364** defines source HTML **386** that is used to generate the web page **358**. The source HTML **386** contains placeholders **380** embedded within the page structure HTML **386** that provide cross–references to web objects **362**. In one embodiment, the web objects **362** define the source code that identify the page elements and content that are placed on the web page **358**. Additionally, the web objects **362** receive the content **366** which is then placed in the page structure **364**. Alternatively, the web object **362** can cross–reference additional placeholders **384**. The placeholders **384** can include style placeholder, data placeholders, or content placeholders.

As shown in FIG. **10A**, an example of HTML source code used to create a web page **358** is shown. The page structure **364** is shown residing on the production database **208** having source HTML **386** with embedded placeholders **392**, **394**, and **396**. As discussed above, the placeholders **372** embedded in the HTML **386** for the page structure **364** can either be data placeholders **374**, style placeholders **376**, or content placeholders **378**. The page structure **364** and the web objects **362** are reusable in many combinations. Thus, the characteristics of a web object **362** can be uniquely defined each time it is used in the page structure **364**.

FIG. **10B** illustrates an example of the web object source code **398** for the web objects **362** that are cross–referenced by the data placeholder **392** shown in FIG. **10A**. The data placeholders **399** further cross–reference the customer's

business address that was entered into the data gathering/design module **205** by the Internet service designer **120**. The production database **208** dynamically maps the information to create a source document that can be published to the World Wide Web.

All of the information needed to generate the web content **110** is saved to the production database, including the customer–defined content as well as characteristics of the Internet service **110** specified by the Internet service designer **120** within the Internet generation subsystem **206**. As a result, no external files need to be saved or created outside of the files located on the web server **136**. In the event that data is lost from the web server **136**, the web content can be regenerated from the production database **208** with minimal effort.

FIGS. **11–16** are flow charts illustrating the logic followed by an Internet service designer **120** when utilizing the system and method of generating an Internet service according to the present invention. Referring first to FIG. **11**, the sale of the Internet service is initially recorded **400**. When the sale is recorded through an agency **402**, the system determines the Internet services available **404** for the associated agency. The Internet services available **404** are presented to the user and the user is allowed to select the Internet service **406** that meets the customer's needs. The method determines the base attributes for the Internet service **410**.

The method determines if the Internet service as it is offered by the agency uses the base attributes as defined for the base Internet service. Otherwise, if the Internet service, as it is offered by the agency, does not use the base attributes as defined for the base Internet service, the method determines the custom attribute as defined for the customized Internet service established in the service design subsystem. The system will continue by determining the price for the Internet service. As discussed above, the price is determined based on the Internet service, the agency, and the billing method and billing frequency of payment selected by the customer.

After resolving the attributes and/or pricing of the Internet service, the customer is prompted to provide demographic information **418** about themselves, such as their name, address, and other similar information. Similarly, the customer can provide information that may be published with the Internet service **420**. Moreover, the customer can also customize the attributes of the Internet service **422**.

The system also allows the customer to customize the billing options **424**. As discussed earlier, the price of the Internet services is determined based upon the service, agency, and the billing method **426** and the billing frequency **428**. The customer can modify the billing method **426** used to pay for the Internet service. For

example, the customer can select to pay for the Internet service using a credit card. Alternatively, the customer can modify the billing frequency **428** for making payments. By varying these factors, the price of the Internet service may be changed. After selection of the billing method **426** and the billing frequency **428**, the price for the Internet service **430** is determined. In addition to the price for the Internet service **430**, any additional setup charges for the Internet service **432** is also determined.

The system proceeds by gathering any miscellaneous information **434** that may be related to the Internet service. Once all of the information has been gathered **434** related to the Internet service, the workflow definition **436** as defined in the services design subsystem **204** is referenced. If the base workflow definition **436** is not used, the customized workflow **438** is implemented by the service generation subsystem. The activity that is currently being done can be a new process or it can be a change of status **440**. If it is an update to the status of the Internet service **442**, the change is noted in the database and saved to the database **444**. At this point, the workflow is saved and the Internet service is moved to the next queue **446**.

FIGS. **15** and **16** illustrates the logic followed by an Internet service designer when utilizing the system and method to automatically generate and publish a web site. It will be understood by one skilled in the art that the process described is also applicable to other Internet services such as a shopping cart, promotional services or other similar Internet services. The web service designer **120** first selects a navigation scheme **448** for the web site. If no navigation scheme is selected, a default navigation scheme is set up and determined for use with the web site. The web service designer **120** next is able to select a style **450** which is associated with the web site. If no style is selected by the web service designer **120**, a default style is automatically used.

After selecting the navigation scheme **448** and the style **450**, an Internet service designer **120** selects a presentation layout, which has a predetermined page structure **456**. The page structure **456** is defined by source HTML that contains placeholders for web objects **458**. A mapping table maps the web objects **458**, and any other predetermined information or content, to the page structure **456** to create the web page.

If the web service designer does not select a presentation layout, a custom map **464** and custom layout **466** must be created. In order to create the custom map **464**, the web service designer **120** supplies custom HTML code for the custom layout **466**. After creation of the custom code, the Internet service designer is able to provide input **468** which can then be incorporated into the code for the

presentation layout **470**. After creation of the custom code, the Internet service designer is able to preview **462** the web page that has been created. If the user accepts the web page, the system prompts the Internet service designer to determine whether or not they are finished **474**. If the web site is not finished, the Internet service designer can add an additional web page **452**. Alternatively, if the web site is finished, the Internet service designer can save the information that will be subsequently used to generate the web site **476** and move to the next queue **478**.

The various embodiments described above are provided by way of illustration only and should not be construed to limit the invention. Those skilled in the art will readily recognize the various modifications and changes which may be made to the present invention without strictly following the exemplary embodiments illustrated and described herein, and without departing from the true spirit and scope of the present invention, which is set forth in the following claims.

THE CLAIMED INVENTION IS:

1. A computerized method for automatically generating customized Internet services available through an agency, wherein the agency defines a sales channel for offering at least one Internet service to a customer, the method comprising:

selecting an Internet service associated with the agency, the Internet service having default attributes that define the characteristics of the Internet service relevant to the agency;

mapping the selected Internet service with the agency to provide a customized work flow definition that lists the activities used to generate the Internet service; and

managing the work flow activities listed in the work flow definition to generate the customized Internet service.

2. The method of claim 1, wherein the method further comprises the step of receiving user input to further customize the attributes of the Internet service associated with the agency according to the needs of the user.

3. The method of claim 1, wherein the method further comprises the step of capturing user defined content for publication with the Internet service, wherein the user defined content includes demographic information about the user.

4. The method of claim 1, wherein mapping the selected Internet service with the agency further provides the cost associated with the Internet service, wherein the cost is automatically determined based on the method and frequency.

5. The method of claim 1, wherein each agency is categorized according to a business classification that defines a default style for each Internet service available through the agency, wherein the default style is configurable according to the needs of the customer.

6. The method of claim 1, wherein the work flow activities listed in the work flow definition include recording the sale associated with the Internet service, designing the Internet service, providing quality control for the Internet service, and publishing the Internet service.

7. The method of claim 6, wherein each of the work flow activities listed in the work flow definition is performed in sequence according to the a predetermined when a checkpoint has occurred.

8. The method of claim 1, wherein the Internet services available through the agency include a web site.

9. The method of claim 1, wherein the Internet services available through the agency include a shopping cart.

10. A computerized method for automatically generating and publishing an Internet service from a database, the method comprising:

selecting a style for the Internet service that defines the overall appearance of the Internet service;

defining a static presentation layout for the Internet service consistent with the selected style, the static presentation layout having source code electronically stored on the database with embedded placeholders associated with at least one web object, wherein each web object defines an element for the Internet service and has source code with embedded object placeholders associated with content for the web object; and

dynamically mapping the content associated with each object placeholder embedded within the web object to create the source code for publishing the Internet service.

11. The method of claim 10, wherein the embedded placeholders associated with each web object includes at least one data placeholder associated with information retrieved from the customer during setup.

12. The method of claim 10, wherein the embedded placeholders associated with each web object includes at least one style placeholder that define the design elements associated with the selected style.

13. The method of claim 10, wherein the method further includes the step of capturing user defined content for publication with the Internet service.

14. The method of claim 13, wherein the embedded placeholders associated with each web object includes at least one content placeholder associated with the user defined content captured for publication with the Internet service.

15. The method of claim 10, wherein the source code for publishing the Internet service is Hypertext Markup Language.

16. The method of claim 10, wherein the source code for publishing the Internet service is eXtensible Markup Language.

17. The method of claim 10, wherein the Internet service includes a web site.

18. The method of claim 10, wherein the Internet service includes a shopping cart.

19. An electronic database for automatically generating and publishing a web site, the database comprising:

a style associated with the web site that defines the overall appearance of the web site;

at least one web page associated with the web site, each web page having a static page structure consistent with the style, the static presentation layout having source code electronically stored in the database having embedded placeholders associated with at least one web object, wherein each web object defines an element located on the web page, the web object having source code with embedded object placeholders associated with content for the web object; and

an index for dynamically mapping the content associated with each object placeholder embedded within the web object to create the source code for publishing the Internet service.

20. The database of claim 19, wherein the embedded placeholders associated with each web object includes at least one data placeholder associated with information retrieved from the customer during setup.

21. The database of claim 19, wherein the embedded placeholders associated with each web object includes at least one style placeholder that define the design elements associated with the selected style.

22. The database of claim 19, wherein the database captures user defined content for publication with the web site.

23. The method of claim 22, wherein the embedded placeholders associated with each web object includes at least one content placeholder associated with the user defined content captured for publication with the web site.

24. The database of claim 19, wherein the source code for publishing the web site is Hypertext Markup Language.

25. The database of claim 19, wherein the source code for publishing the web site is eXtensible Markup Language.

26. A computerized method for automatically generating customized Internet services available through an agency, the method comprising:

providing at least one default service;

providing a plurality of attributes; and

automatically mapping predetermined attributes selected from the plurality of attributes with the default service, thereby creating a customized Internet service.

27. The computerized method of claim 26 further comprising:

providing a plurality of pricing characteristics; and

automatically mapping predetermined pricing characteristics selected from the plurality of pricing characteristics with the default service.

28. The computerized method of claim 27 further comprising:

providing a plurality of workflow activities; and

automatically mapping predetermined workflow activities selected from the plurality of workflow activities with the default service.

29. A computerized method of generating a web page for posting on the Internet, the method comprising:

providing a page structure;

providing a plurality of objects, each object relating to content used to form the web page; and

mapping the content with the page structure, thereby creating a web page.

30. The computerized method of claim 29 further comprising storing a single copy of the web page.

31. The computerized method of claim 30 further comprising storing copies of the page structures and the plurality of objects.

32. The computerized method of claim 31 further comprising repeating the step of mapping the content with the page structure to recreate the web page.

33. The computerized method of claim 32 wherein repeating the step of mapping the content with the page structure to recreate the web page is performed when an event happens to the web page, the event being selected from the group consisting essentially of: the web page being erased or the web page being corrupted.

34. The computerized method of claim 29 wherein:

each web page is formed with a page structure and content, the content including web objects; and

the step of mapping the content with the page structure is executed by referencing the content to the page structure in a mapping table.

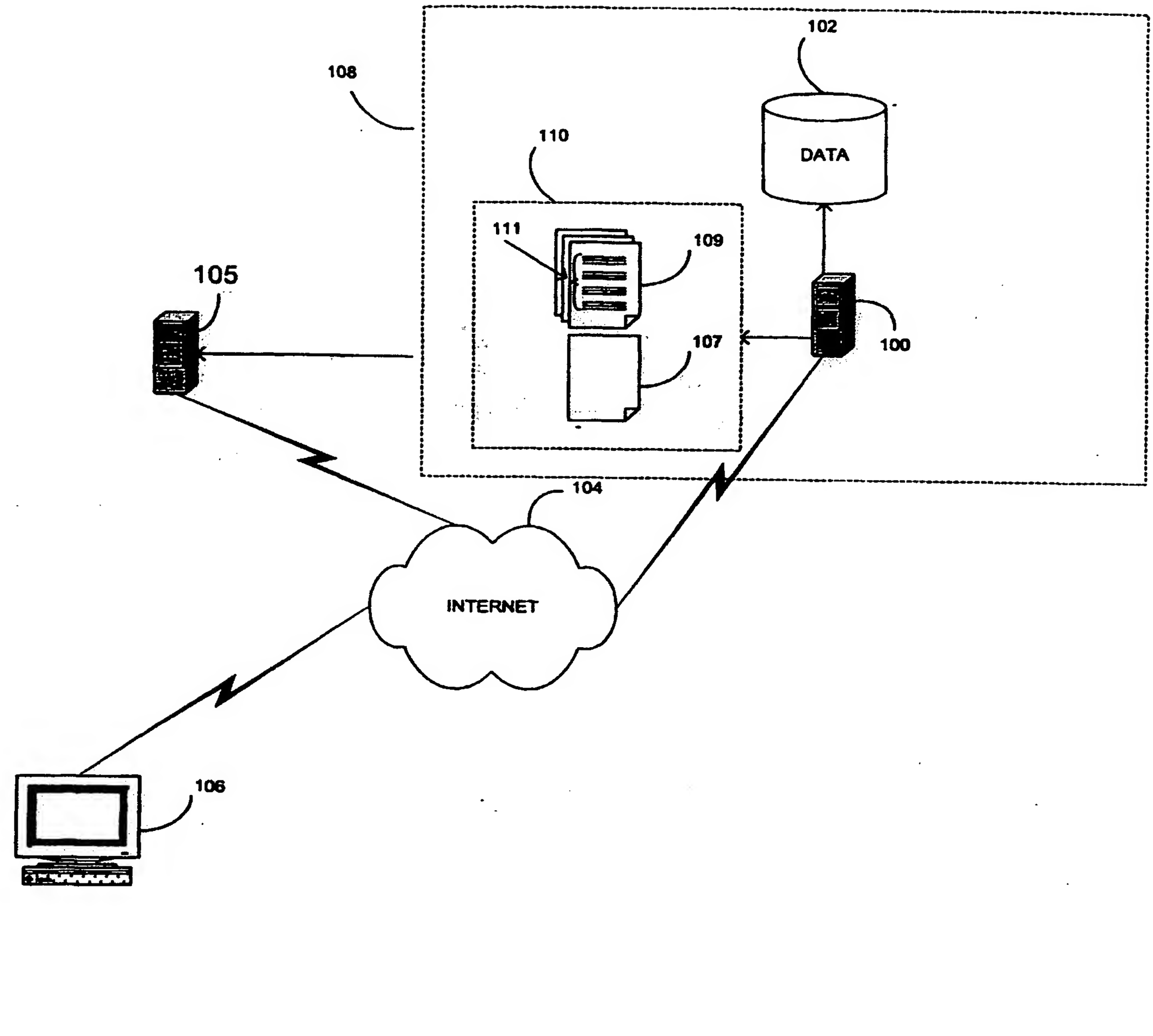

FIG. 1

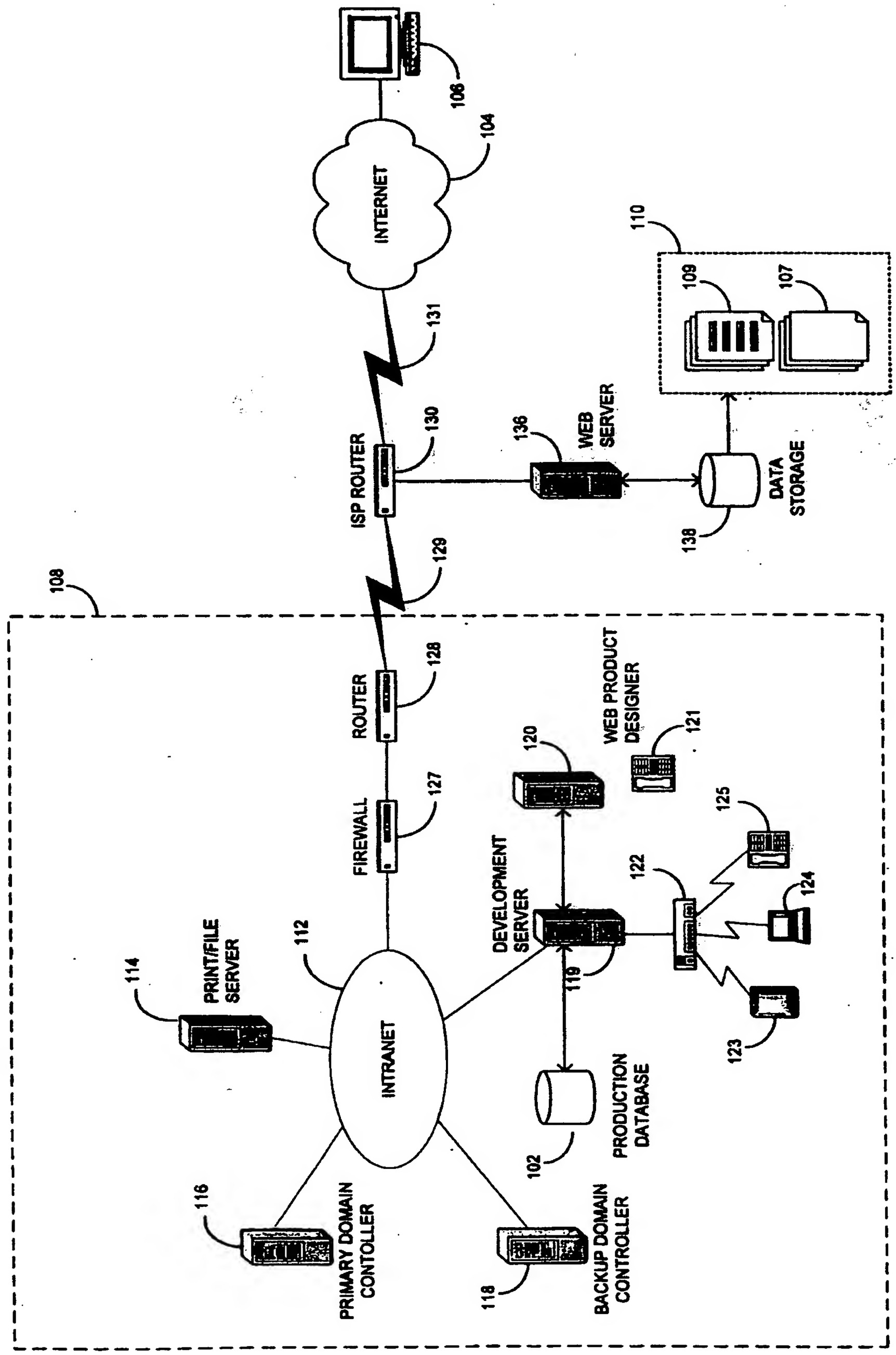
106
104
INTERNET
131
ISP ROUTER
130
136
WEB SERVER
110
109
107
DATA STORAGE
138
129
108
ROUTER
128
FIREWALL
127
WEB PRODUCT DESIGNER
121
120
DEVELOPMENT SERVER
125
122
124
123
119
112
INTRANET
114
PRINT/FILE SERVER
116
PRIMARY DOMAIN CONTOLLER
118
BACKUP DOMAIN CONTROLLER
102
PRODUCTION DATABASE

FIG. 2

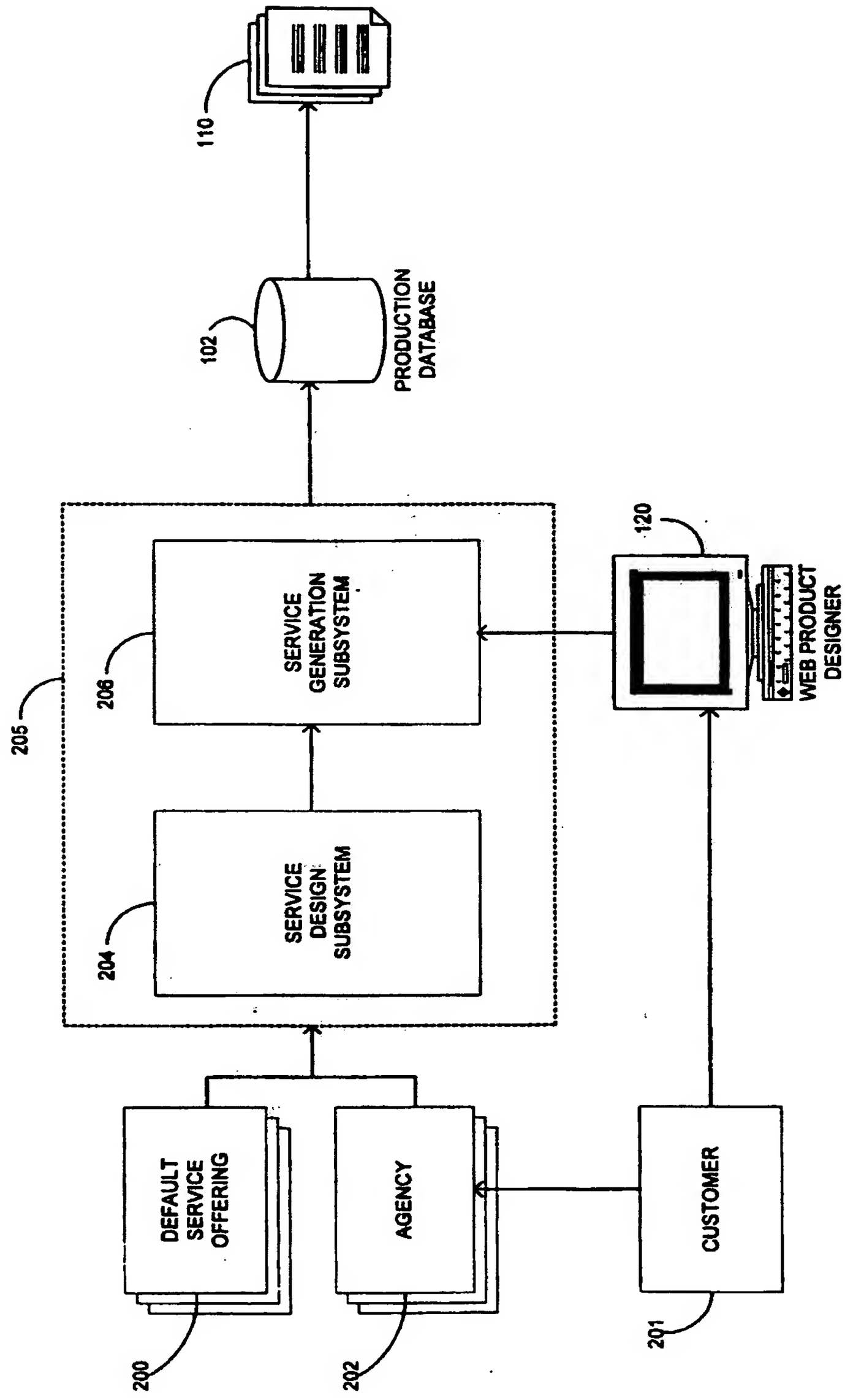
110
102
PRODUCTION DATABASE
205
206
SERVICE GENERATION SUBSYSTEM
204
SERVICE DESIGN SUBSYSTEM
120
WEB PRODUCT DESIGNER
DEFAULT SERVICE OFFERING
AGENCY
CUSTOMER
200
202
201

FIG. 3

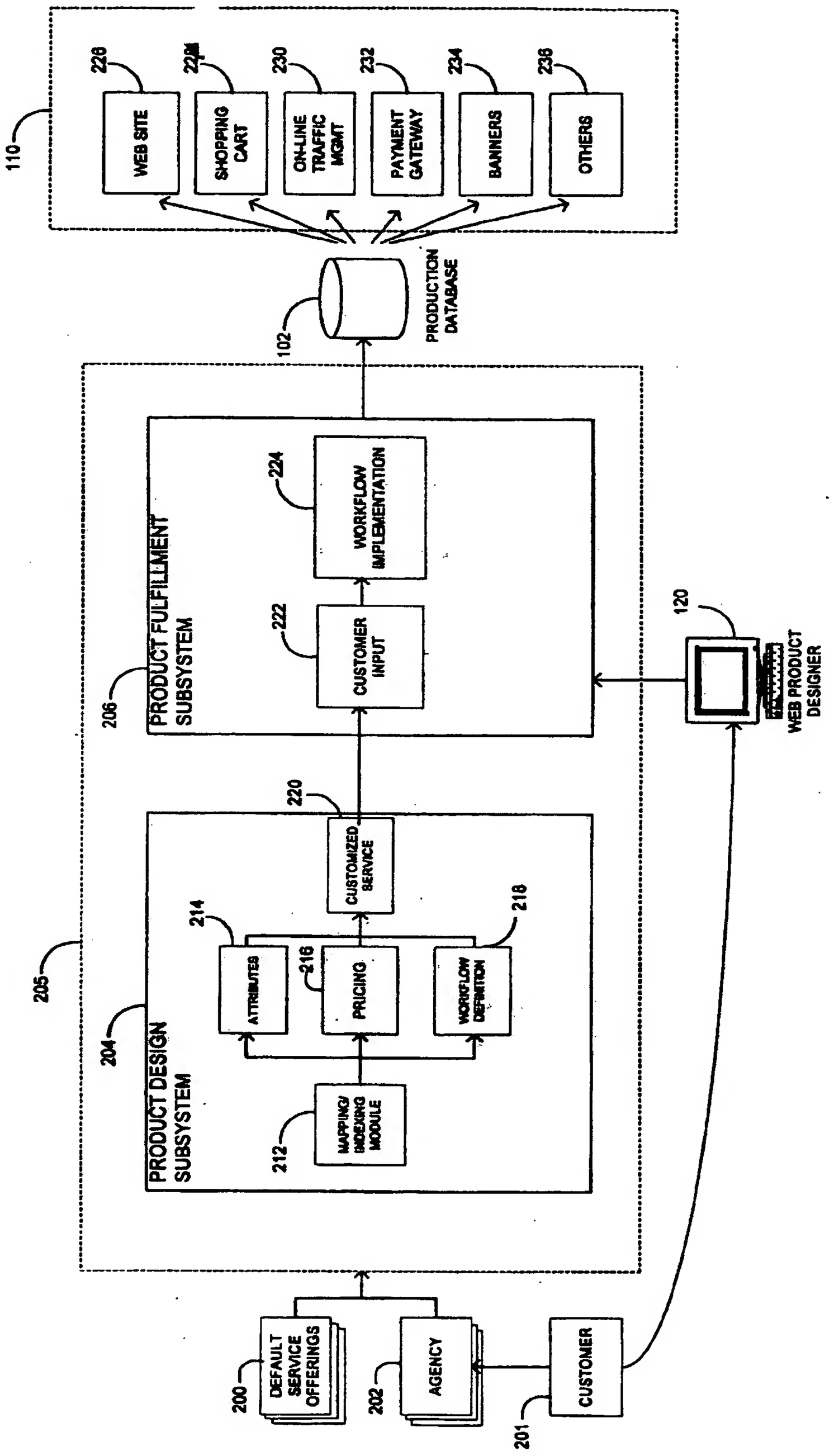
110
226
228
230
232
234
236
WEB SITE
SHOPPING CART
ON-LINE TRAFFIC MGMT
PAYMENT GATEWAY
BANNERS
OTHERS
102
PRODUCTION DATABASE
205
204
PRODUCT DESIGN SUBSYSTEM
214
216
218
ATTRIBUTES
PRICING
WORKFLOW DEFINITION
220
CUSTOMIZED SERVICE
212
MAPPING/ INDEXING MODULE
206
PRODUCT FULFILLMENT SUBSYSTEM
222
CUSTOMER INPUT
224
WORKFLOW IMPLEMENTATION
120
WEB PRODUCT DESIGNER
200
DEFAULT SERVICE OFFERINGS
202
AGENCY
201
CUSTOMER

FIG. 4

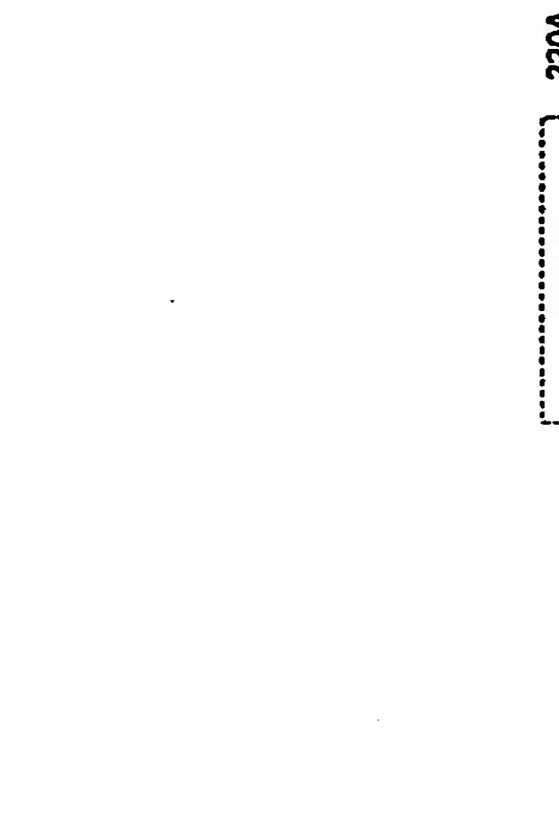

FIG. 5A

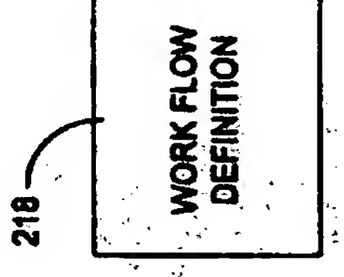

FIG. 5C

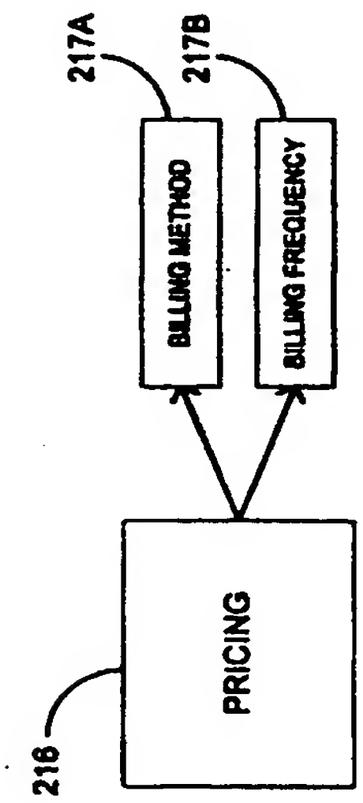

FIG. 5B

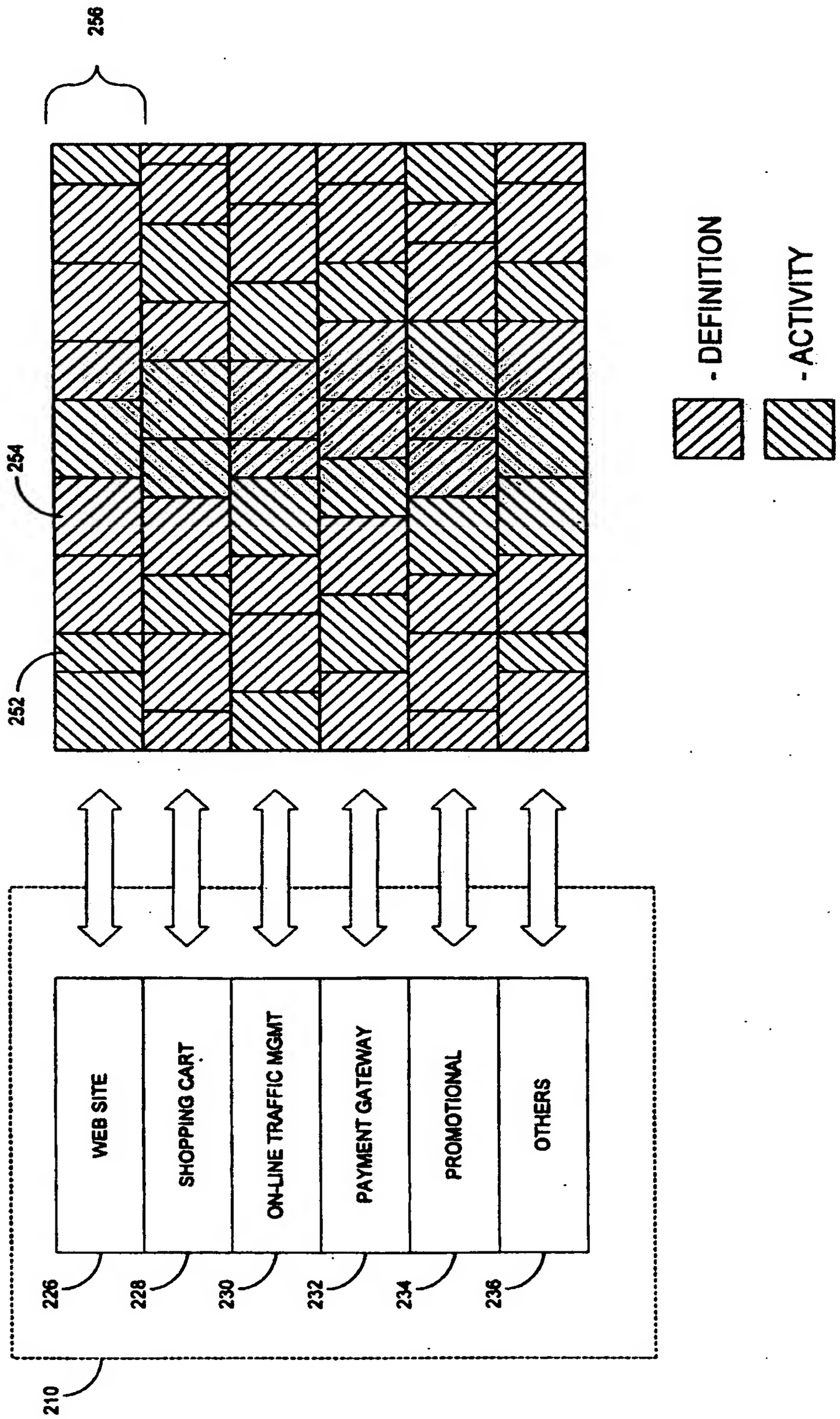
256
254
252
- DEFINITION
- ACTIVITY
WEB SITE
SHOPPING CART
ON-LINE TRAFFIC MGMT
PAYMENT GATEWAY
PROMOTIONAL
OTHERS
226
228
230
232
234
236
210

FIG. 6

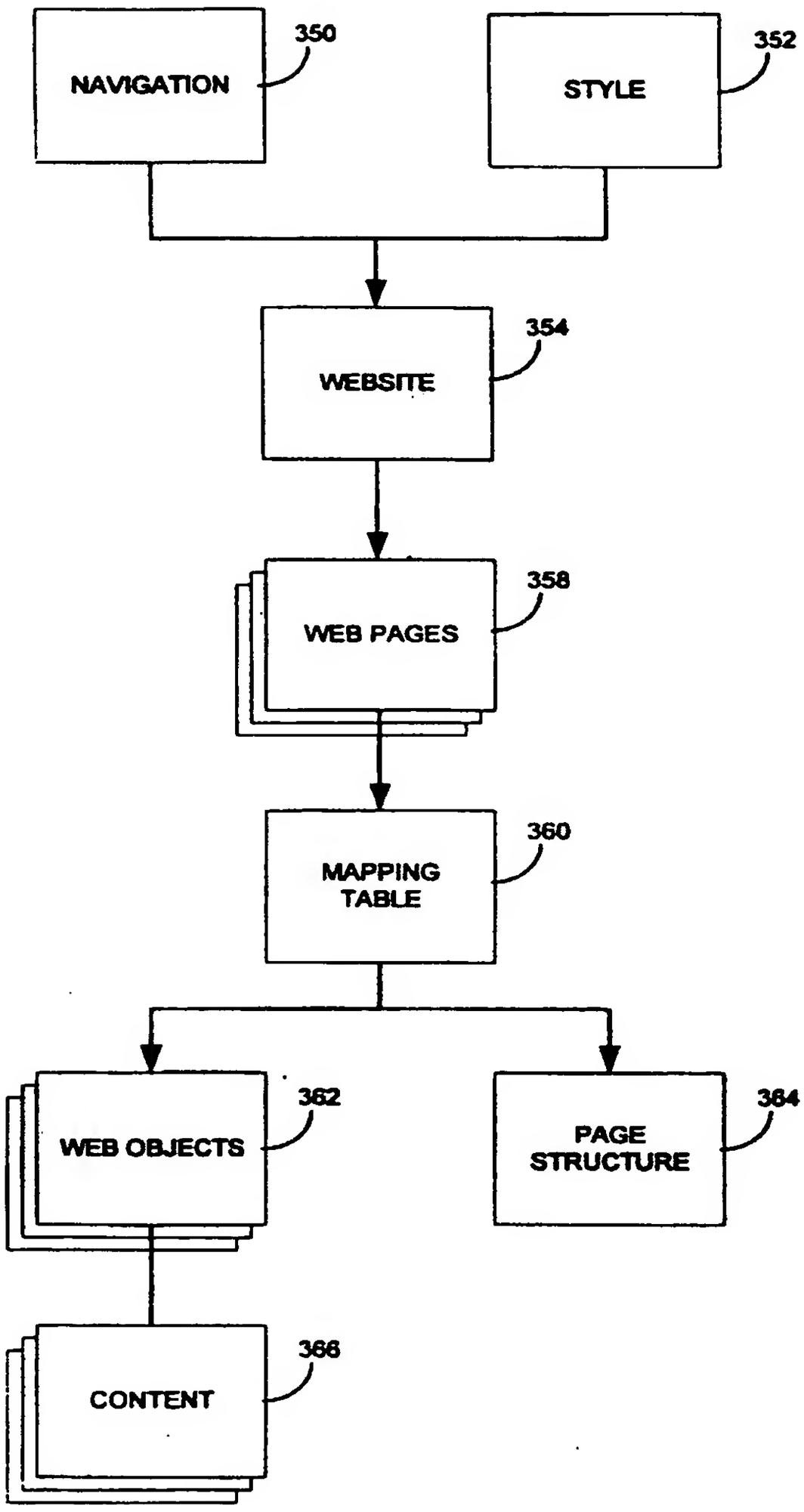
NAVIGATION
350
STYLE
352
WEBSITE
354
WEB PAGES
358
MAPPING TABLE
360
WEB OBJECTS
362
PAGE STRUCTURE
364
CONTENT
366

FIG. 7

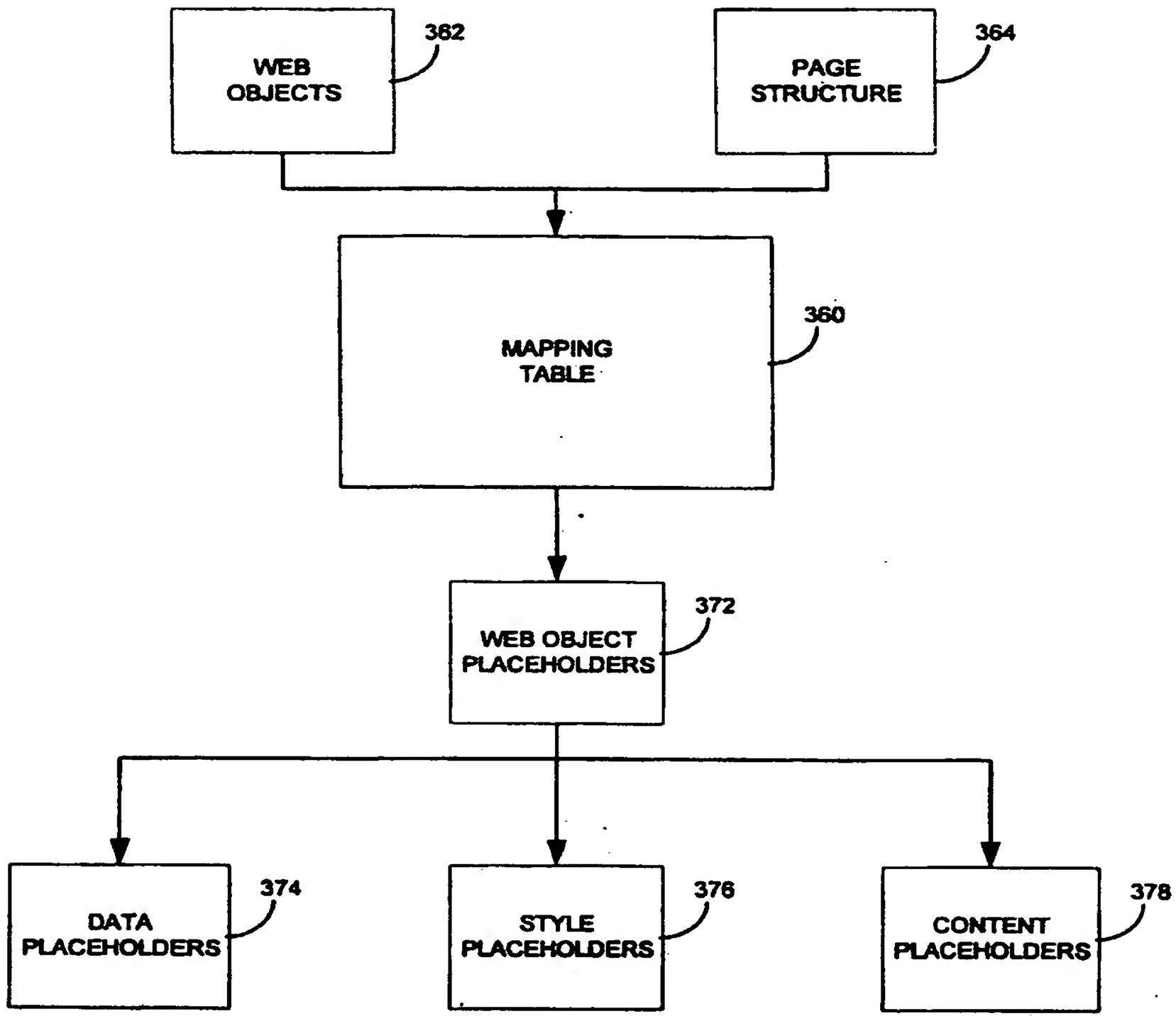
WEB OBJECTS
382
PAGE STRUCTURE
364
MAPPING TABLE
360
WEB OBJECT PLACEHOLDERS
372
DATA PLACEHOLDERS
374
STYLE PLACEHOLDERS
376
CONTENT PLACEHOLDERS
378

FIG. 8

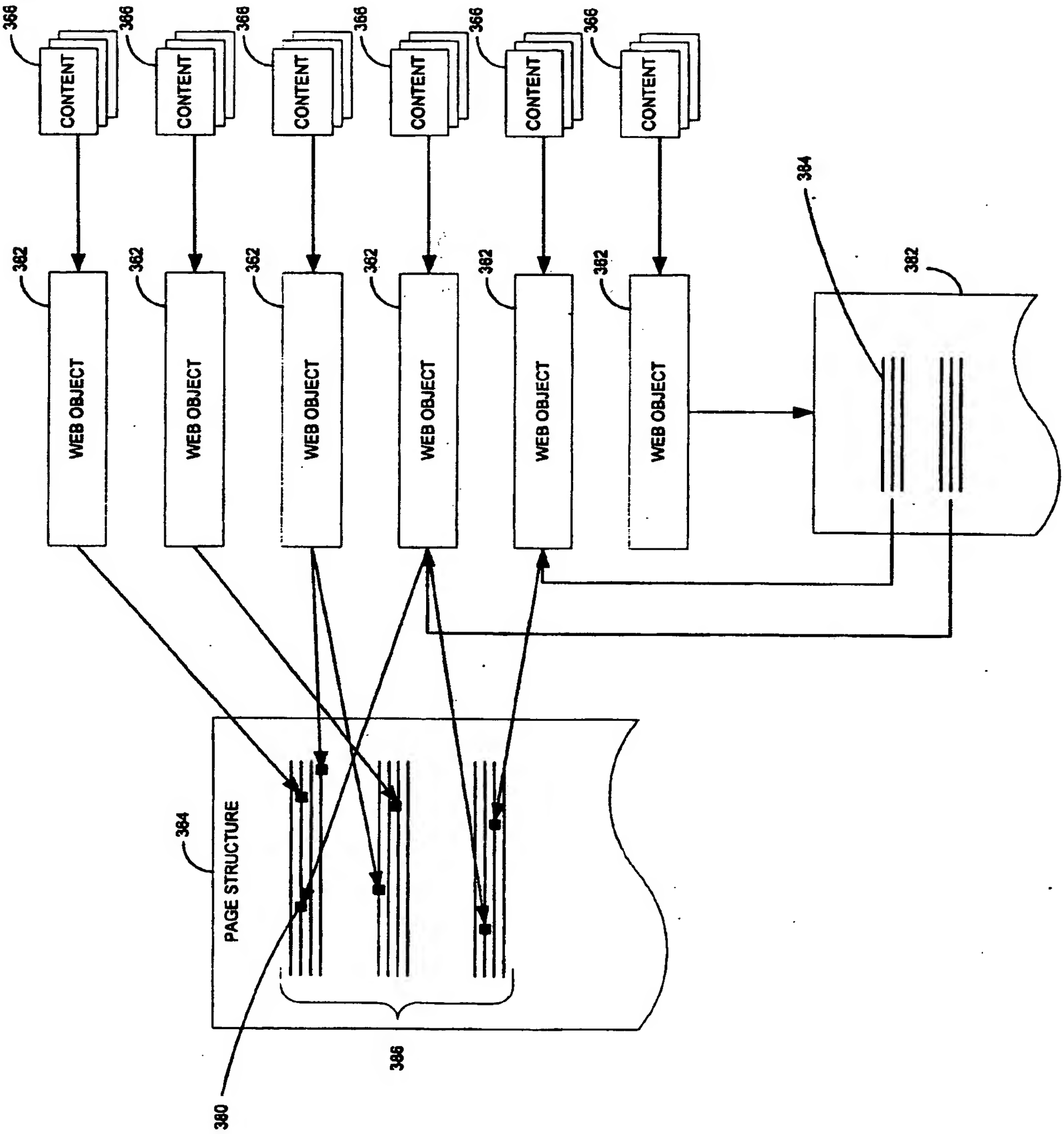

FIG. 9

364

PAGE STRUCTURE

PAGE STRUCTURE NAME	PAGE STRUCTURE SOURCE (HTML)
ABB 1	<!--ABB 1 Page Structure - Last Modified: 20 Octoboer 1999, by prr=^.^=--> <table width=100% cellpadding="20" cellspacing="0"> <tr> <td> <#> <!---------- Place Header ----------> <#PLACE.1#> </#> <#> <!---------- Place Business Info Without Company Name ----------> <font color="<S.TEXT_COLOR1#>"><#PLACE.2#> </#> <!---------- Top HR ----------> <img src="#S.HR1#>"> <!---------- Company Slogan ----------> <font color="<S.TEXT_COLOR1#>"><#PLACE.3.16#> </#> . . .

386

390

392

394

FIG. 10A

398

WEB OBJECT	
WEB OBJECT NAME	**WEB OBJECT SOURCE (HTML)**
.	.
.	.
.	.
<PLACE.2#> = Business Info - No Co Name	<#><#D.ADDR1#></#> <#> <#D.ADDR2#></#> <#> <#D.CITY#>,<#D.STATE#><#D.ZIP#</#> <#> Toll-Free: <#D.TOLL_FREE#></#> <#> Phone: <#D.PHONE#></#> <#> Fax: <#D.FAX#></#> <#> Email: <a href="mailto:<#D.EMAIL#>"><#D.EMAIL#</#> <#> Web: <a href="<#D.COMPANY_URL#>"><#D.COMPANY_URL#></#> <#> <#D.ADDTL_INFO#></#>
.	.
.	.
.	.

399

FIG. 10B

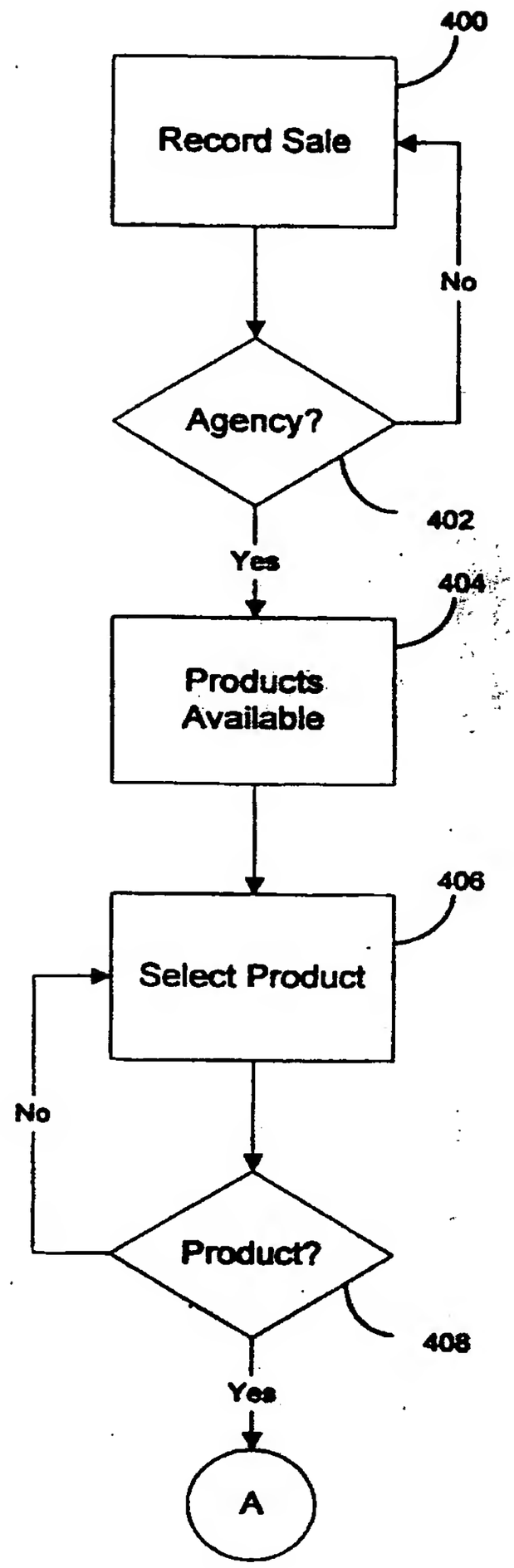
400
Record Sale
No
Agency?
402
Yes
404
Products Available
406
Select Product
No
Product?
408
Yes
A

FIG. 11

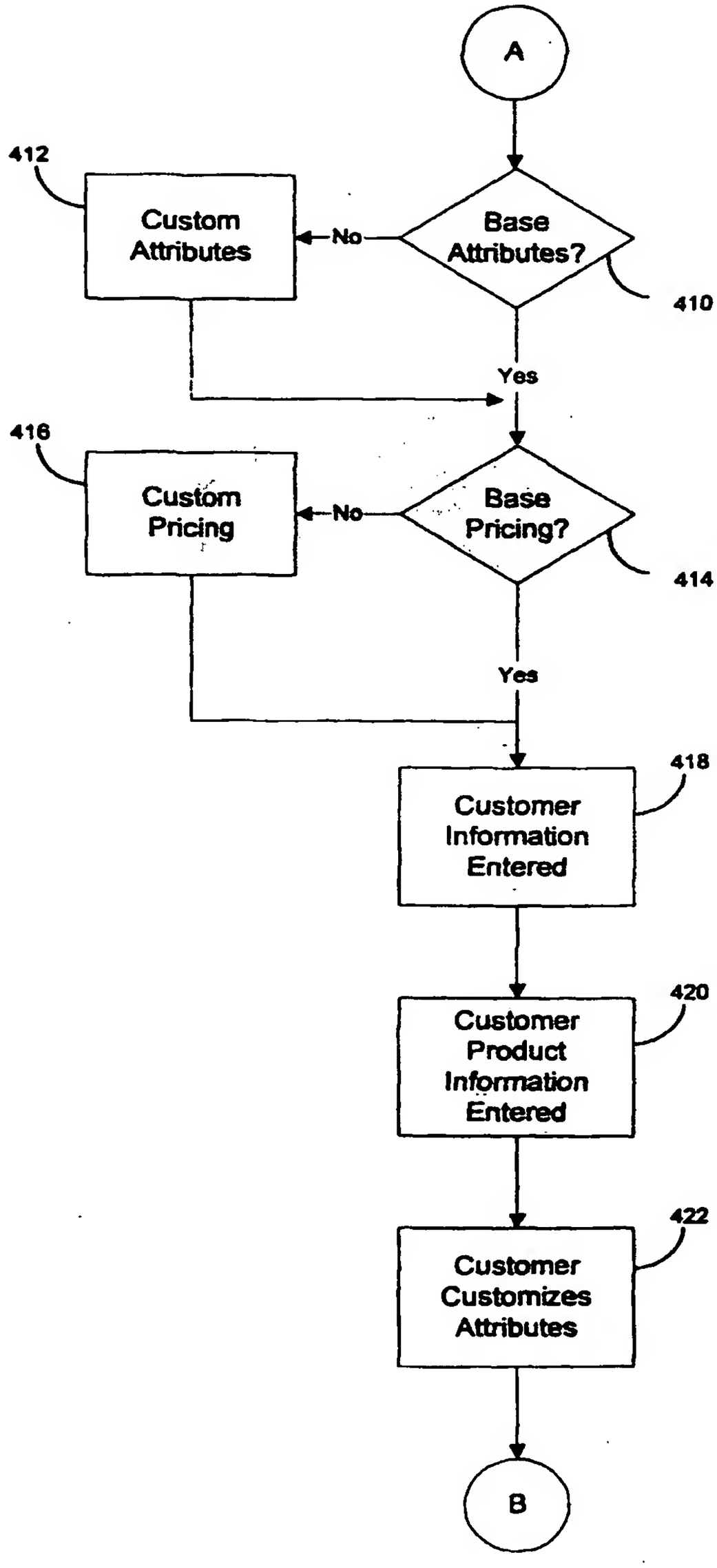
A
412
Custom Attributes
No
Base Attributes?
410
Yes
416
Custom Pricing
No
Base Pricing?
414
Yes
418
Customer Information Entered
420
Customer Product Information Entered
422
Customer Customizes Attributes
B

FIG. 12

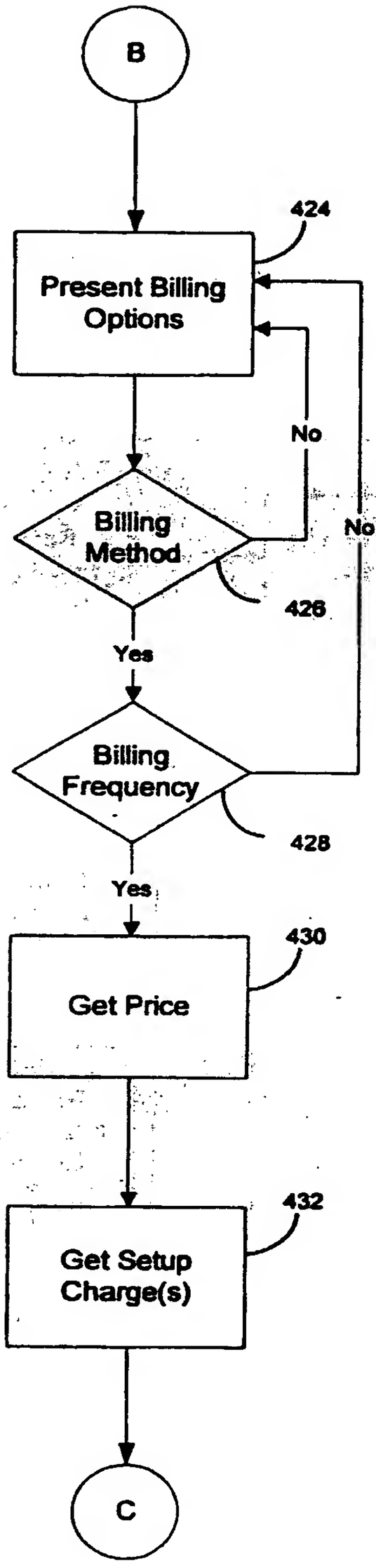
B
424
Present Billing Options
No
Billing Method
No
426
Yes
Billing Frequency
428
Yes
430
Get Price
432
Get Setup Charge(s)
C

FIG. 13

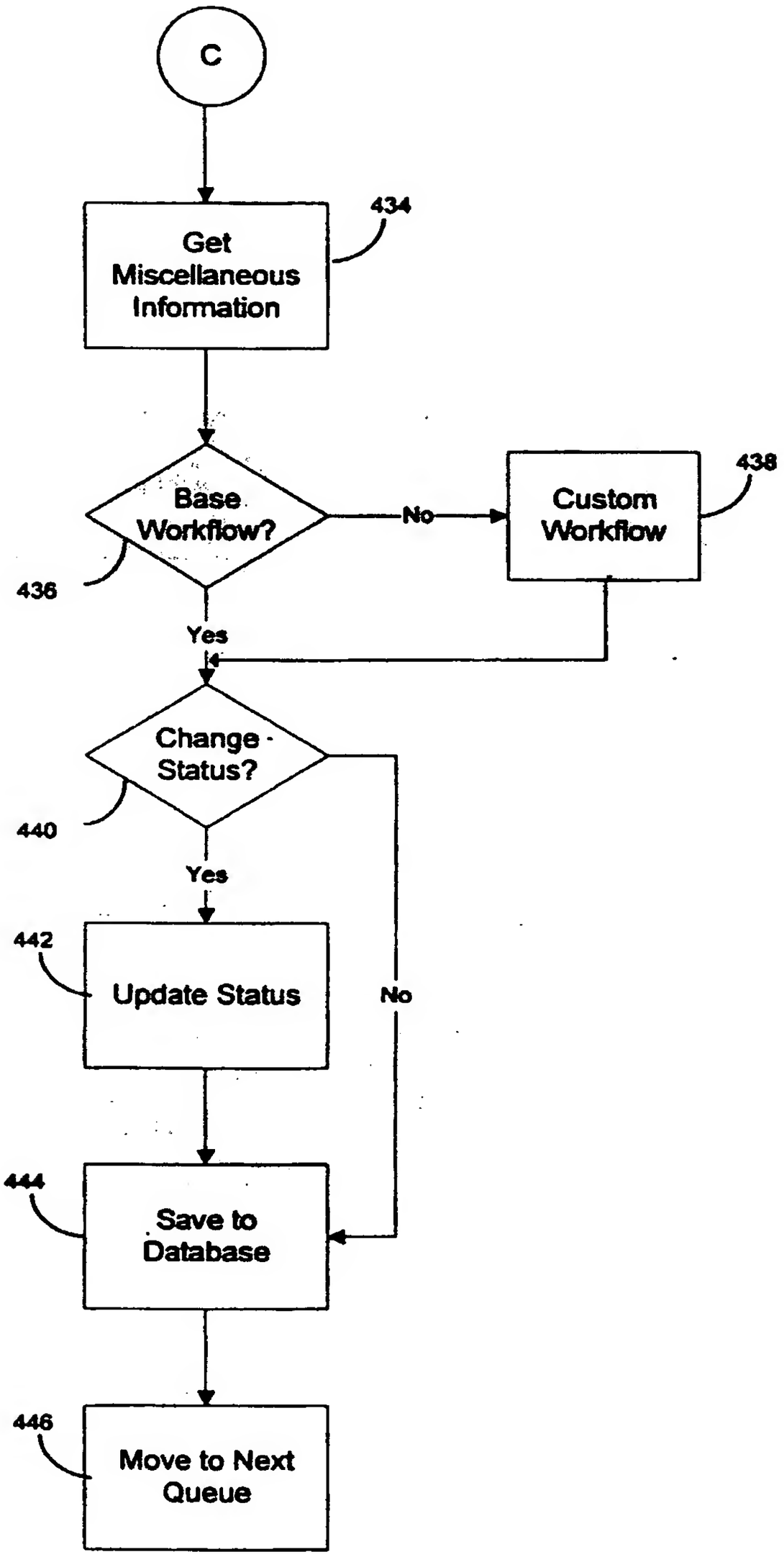
C
Get Miscellaneous Information
434
Base Workflow?
436
No
Custom Workflow
438
Yes
Change Status?
440
Yes
No
442
Update Status
444
Save to Database
446
Move to Next Queue

FIG. 14

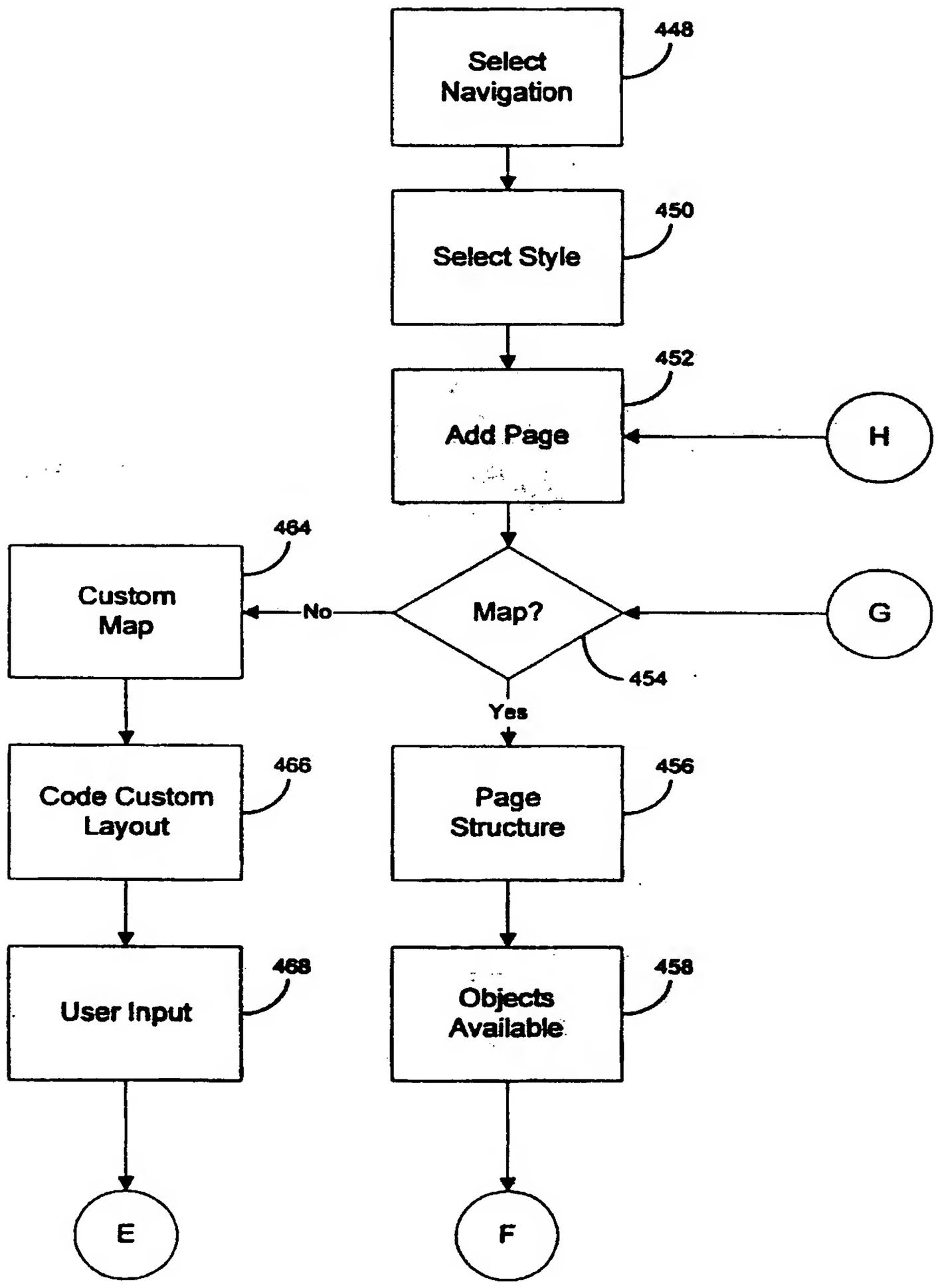
Select Navigation
448
Select Style
450
Add Page
452
H
Map?
454
G
No
Custom Map
464
Yes
Code Custom Layout
466
Page Structure
456
User Input
468
Objects Available
458
E
F

FIG. 15

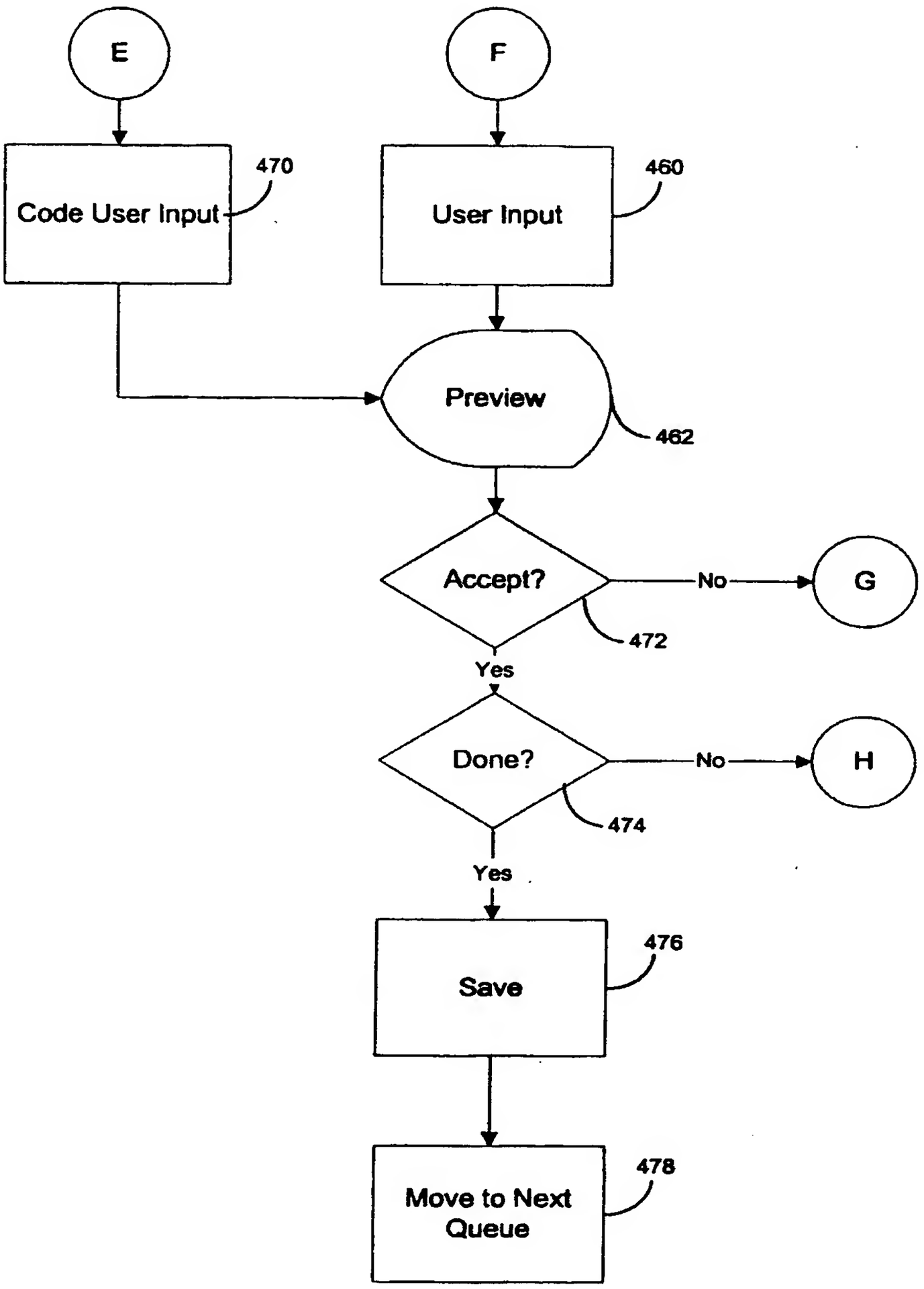
E
Code User Input
470
F
User Input
460
Preview
462
Accept?
No
G
472
Yes
Done?
No
H
474
Yes
Save
476
Move to Next Queue
478

FIG. 16